

REMARKS

This application has been amended so as to place it in condition for allowance at the time of the next Official Action.

The Official Action rejects claims 1-5 and 7-9 under 35 USC §103(a) as being unpatentable over TSUKAMOTO in view of BARNES et al. Reconsideration and withdrawal of this rejection are respectfully requested for the following reasons:

The Official Action states that the primary TSUKAMOTO reference discloses a brittleness rating method for a coating substance including the steps of deforming a test film piece formed by laminating a support with a coating substance and detecting acoustic emissions produced by such deformation. The Official Action acknowledges, however, that TSUKAMOTO does not specifically disclose or suggest using such results as an interpretation of brittleness of the coating substance.

The secondary BARNES et al. reference is offered for its asserted teaching or suggestion of determining brittleness properties of a test subject by measuring the acoustic emissions produced thereby.

Applicant notes that the TSUKAMOTO apparatus is provided for measurement of an adhesion force of a thin film. The adhesion force in question is not a characteristic of the thin film exclusively. Rather, it is a characteristic of the combination of a particular thin film with a particular substrate, as the character of adhesion between the two depends

upon the characteristics of both elements. This is true in connection with both what TSUKAMOTO describes as the conventional approaches of the prior art as well as the method disclosed thereby. In column 2, beginning on line 10, TSUKAMOTO, in connection with the prior art, states:

Since the critical load measured by the scratch type method is complicatedly dependent upon the hardness of the substrate and the thickness of the thin film, maintaining consistent substrate hardness and film thickness is required to measure the critical loads. Another requirement for the measurement of the critical loads is that the surfaces of the substrates and the thin films be individually finished in the same condition because the surface roughness of the substrates and the thin film also has influence on the critical load.

The same characteristic holds true with the device disclosed by TSUKAMOTO. As noted in column 3, beginning on line 21:

The principle of measurement in accordance with the present invention is based on the fact that the number, amplitude and frequency of an AE signal associated with destruction or separation depends upon the location where the destruction or the separation occurs, i.e. within the substrate, within the thin film or at the boundary between the substrate and the thin film.

Clearly, not only the TSUKAMOTO device but more generally the overall intent of measuring an adhesion force of a thin film is a function of both the thin film and the substrate to which the thin film is adhered. Therefore, the TSUKAMOTO reference teaches performing a test upon the exact thing whose characteristics are being measured, namely a combination of a particular thin film and a particular substrate.

This lies in stark distinction to the present invention, the purpose of which is to test the brittleness of a freestanding film by performing a deformation and AE sample not of the film by itself, but rather of a combination of the film and a support piece.

As described in the present specification with respect to the related art, there exist no acceptable methods of testing the brittleness of a freestanding film in the prior art. These methods require approaches such as bending the film around successively smaller diameter cores until visual evidence of crazing is exhibited. As the specification points out on page 2 in the paragraph beginning on line 9, the known methods are inappropriate for the testing films that are particularly thin and brittle. This is particularly so in connection with substances such as films used in electrophotography, which are too brittle and/or too thin to be independently removed and/or handled as a film.

As described beginning in the paragraph spanning pages 5 and 6, the coating substance in the form of a film 12 is the subject of brittleness testing in the present invention. However, the film 12 is not tested as the freestanding film itself. Instead, the test film is laminated to a support. The support 11 can be made of a polyethylene terephthalate (PET) film or paper sheet laminated with a polyolefin resin.

As is clear from the identified passage and the remainder of the present specification, the deformation and detection of acoustic emission provides information defining characteristics of a freestanding thin film, but the test procedure itself is not performed on the freestanding thin film by itself. Instead, the measurement procedure is performed on a lamination of the thin film and support piece.

As such, the measurement of characteristics of the lamination provides accurate brittleness information as to only one of the components of the lamination. In this way, it operates as a method for predicting brittleness of a freestanding thin film without performing an experiment on the freestanding thin film itself.

Moreover, Applicant notes that, while the illustration of Figure 3 of the TSUKAMOTO reference might appear to be indicative of a deformation test, this is not what it represents. Instead, this illustrates the TSUKAMOTO approach to determining adhesion force by producing an indentation with a ball probe. This offers nothing whatsoever in connection with the brittleness testing of the present invention.

In accordance with these characteristics of the present invention, applicant has amended each of independent claims 1 and 7. Each now specifically points out that the brittleness rating applies to only the coating substance based on the test performed on the combination of the coating substance and the support

piece. At least this set of features is clearly neither disclosed nor suggested by the TSUKAMOTO reference, which concerns itself with testing a lamination of two elements to measure a characteristic that relates specifically to the combination of such elements.

The secondary BARNES et al. reference is offered merely for its asserted suggestion of measuring acoustic emission to determine brittleness properties. However, irrespective of the general teaching of BARNES et al., it nevertheless fails to overcome the shortcomings of the TSUKAMOTO reference, as neither of the applied references teaches the characterization of brittleness of a single component, namely a freestanding thin film, by performing deformation and acoustic emission measurement of a lamination of such thin film with a support piece.

The Official Action states that claim 6 is allowable but for its dependence from rejected base claim 1. However, irrespective of the characteristics of claim 6 in particular, applicant suggests that such claim should be in condition for allowance at least by virtue of its dependence from independent claim 1.

In addition to the amendments described above, applicant has added new claims 10-16. Of these, claim 10 is an independent method claim from which the remainder of the new claims depend. Claim 10 also recites characteristics of the method that involve predicting a brittleness rating of a

freestanding thin film by performing measurements involving deformation and acoustic emission detection not of the freestanding thin film itself, but instead of a lamination of a support piece with a coating substance corresponding to the thin film.

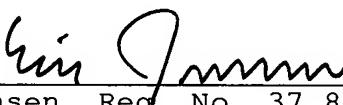
In light of the amendments provided above and the arguments offered in support thereof, applicant believes that the present application is in condition for allowance and an early indication of the same is respectfully requested.

If the Examiner has any questions or requires further clarification of any of the above points, the Examiner may contact the undersigned attorney so that this application may continued to be expeditiously advanced.

Respectfully submitted,

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